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Parolee Recidivism in California:

The Effect of Neighborhood Context and Social Service Agency Characteristics

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Abstract

We studied a sample of re-entering parolees in California in 2005-06 to examine whether the social structural context of the census tract, as well as nearby tracts, along with the relative physical closeness of social providers, affects serious recidivism resulting in imprisonment. We found that a one standard deviation increase in the presence of nearby social service providers (within two miles) decreases the likelihood of recidivating 41%, and that this protective effect was particularly strong for African American parolees. This protective effect was diminished by over-taxed services (as proxied by potential demand). We found that higher concentrated disadvantage and social disorder (as measured by bar and liquor store capacity) in the tract increases recidivism, but also that higher levels of disadvantage and disorder in nearby tracts increase recidivism. A one standard deviation increase in the concentrated disadvantage of the focal neighborhood and the surrounding neighborhoods increases the likelihood of recidivating 26%. The findings suggest that the social context to which parolees return (both in their own neighborhood and nearby neighborhoods), as well as the geographic accessibility of social service agencies, plays an important role in their successful reintegration.

Keywords: parolees, recidivism, social services, neighborhoods, propinquity, event history analysis, prison reentry, parole revocation.

Bios
John R. Hipp is an Associate Professor in the department of Criminology, Law and Society, and Sociology, at the University of California Irvine. His research interests focus on how neighborhoods change over time, how that change both affects and is affected by neighborhood crime, and the role networks and institutions play in that change. He approaches these questions using quantitative methods as well as social network analysis. He has published substantive work in such journals as *American Sociological Review, Criminology, Social Forces*, *Social Problems, Mobilization, City & Community, Urban Studies* and *Journal of Urban Affairs*. He has published methodological work in such journals as *Sociological Methodology*, *Psychological Methods*, and *Structural Equation Modeling*.

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Parolee Recidivism in California:

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It is well documented that imprisonment rates in the U.S. have increased dramatically over the last 25 years. The number in U.S. prisons has increased from 330,000 in 1980 to over 1.5 million in 2005, a 450 percent increase (Harrison and Beck, 2006; Lynch and Sabol, 2001). One important implication of this mass incarceration is that these prisoners eventually return to communities, posing the challenge of successfully reintegrating these offenders into society. The number of parolees annually returning to U.S. neighborhoods has increased from 170,000 in 1980 to about 700,000 in 2005 (Lynch and Sabol, 2001; Sabol and Harrison, 2007). As a consequence, the number of ex-offenders residing in communities has risen from 1.8 million in 1980 to 4.3 million in 2000 (Raphael and Stoll, 2004). Understanding what neighborhood contexts affect the reintegration of these ex-offenders is a crucial question.

Although numerous studies have focused on the individual characteristics that identify the parolees who are most likely to successfully reintegrate, there is a growing realization of a need to understand the social context to which these offenders return for understanding successful reintegration (Clear, 2007; La Vigne, Cowan, and Brazzell, 2006; Visher and Travis, 2003). Nonetheless, empirical evidence addressing this question is sparse. One of the few studies viewing the effect of neighborhood context on recidivism was that of Kubrin and Stewart (2006). Their analyses provided important insight into this process, showing that parolees in neighborhoods with higher levels of concentrated disadvantage experienced greater rates of recidivism even after taking into account the individual characteristics of these parolees. This highlighted the possible importance of the social context for successful reintegration.

Despite the important contribution of the Kubrin and Stewart (2006) research, it left many unanswered questions. First, their study only focused on the economic context of the

neighborhood for affecting recidivism. A wealth of research in the neighborhoods and crime literature—particularly that in the social disorganization tradition—suggests that other dimensions are also likely important (Bellair, 1997; Hipp, 2007b; Sampson and Groves, 1989; Taylor and Covington, 1993). Specifically, given that the social disorganization model posits that racial/ethnic heterogeneity and residential instability have effects on neighborhood crime rates, these structural conditions may also impact the successful reintegration of parolees. Furthermore, beyond the social context of the neighborhood in which the parolee resides (often measured as a census tract), the social context of surrounding neighborhoods may play an important role. To the extent that this broader geographic area plays an important role in reintegration, it is crucial to take this into account, though we are aware of no studies that have done so.

Beyond the general social context of neighborhoods (and nearby neighborhoods) encountered by all residents, parolees returning to communities often have particular needs. Given their frequent serious problems with substance abuse, financial issues, family conflict, low educational attainment, and weak social networks of support (Petersilia, 2003), parolees have difficulties obtaining employment and stable housing and thus desisting from criminal behavior. As a consequence, parolees often have a need for the services provided by social service agencies. To the extent that parolees are returning to neighborhoods that do not provide access to the range of services that are important for reintegrating them into the broader community, they may be less likely to successfully reintegrate and thus be more likely to recidivate. Given the evidence of the importance of services for reintegrating offenders (Zhang, Roberts, and Callanan, 2006), and evidence from the public health and workforce literature that proximity to social services is an important facilitator of accessing them (Allard, Tolman, and Rosen, 2003; Brameld and Holman, 2006; Gregory, Malka, Kostis, Wilson, Arora, and Rhoads, 2000; Piette

and Moos, 1996; Weiss and Greenlick, 2007), investigating whether the *proximity* of services in the community to released offenders is related to their successful reintegration is a crucial question.

We address these voids by constructing and analyzing a unique data set to test the effect of the context of the neighborhood (and surrounding neighborhoods) on serious recidivism by parolees in the state of California in two recent years: 2005 and 2006. Our outcome measure is instances in which the parolee is returned to prison through the parole revocation process or the courts. There is evidence that although revocation for a technical violation is a policy choice at the level of the institution for a particular infraction, parole agents have diminishing discretion for parolees originally convicted of serious or violent crimes (Grattet, Petersilia, and Lin, 2008). Our study makes several important contributions: 1) we are able to test whether a greater number of social service providers near parolees decrease their likelihood of serious recidivism, and whether parolees near service providers with higher levels of potential demand (a proxy for possibly over-taxed providers) have higher levels of recidivism; 2) we take into account several dimensions of the neighborhood context beyond simply the economic resources; 3) we extend prior research by also taking into account the effect of the social context of nearby neighborhoods on recidivism.   We show that our precise measure of the location of service providers has a much stronger effect than does a measure that simply aggregates service providers to the local census tract.

Effect of neighborhood context on recidivism

Although a large body of scholarship has focused on the characteristics of parolees who are most likely to successfully reintegrate into society, there is a growing realization that the context into which these parolees return also plays an important role (Clear, 2007). Early theoretical work suggested the likely importance of the social context for the reintegration

process of parolees. For example, McCleary (1978) and Simon (1993) both describe how the parole agents' decisions regarding parolees are often made within a particular social context that strongly conditions these choices. Earlier Studt (1973), and more recently Thompson (2008), Clear (2007) and Gonnerman (2004), described the reintegration process as one of enormous adjustment, in which the rhythms of life outside incarceration starkly contrast with those inside. Given this perspective, the particular characteristics of this context almost certainly shape this reintegration process, affecting its success or failure. Given the large literature focusing on certain neighborhood structural characteristics that are posited to affect crime levels in general, it is reasonable to suppose that these characteristics also play an important role in the reintegration of individual parolees.

One key theory used in studies of general crime in neighborhoods is social disorganization theory, which comes from research of the Chicago School (Shaw and McKay, 1942), and posits that certain neighborhoods get locked into a cycle of disadvantage that increases the level of crime. Specifically, neighborhoods with higher levels of economic disadvantage, racial/ethnic heterogeneity, and residential instability are posited to have fractured social ties that would otherwise provide the informal social control necessary to reduce levels of crime. If such processes are indeed important for affecting the level of crime in a neighborhood, it is likely that they would also affect the ability of parolees in such neighborhoods to desist from crime. That is, parolees who return to neighborhoods with higher levels of social disorganization—along with lower levels of informal social control—likely have less ability to successfully reintegrate with society compared to parolees returning to more socially organized neighborhoods.

Nonetheless, few studies have tested the effect of neighborhood characteristics on recidivism. One early study was conducted on parolees in Baltimore neighborhoods in 1982, and

found few contextual effects on recidivism rates (Gottfredson and Taylor, 1988). However, the limited statistical power of this study given that they only had information on 57 neighborhoods limits the conclusions that can be drawn from it. Another study of Baltimore parolees in 1981 found contextual effects when accounting for the interaction of the context with individual characteristics of the parolees (Gottfredson and Taylor, 1986). One recent study was conducted by Kubrin and Stewart (2006) and tested the effect of neighborhood economic disadvantage on recidivism rates. This study found that economically disadvantaged neighborhoods increased the likelihood of recidivism even when taking into account the individual characteristics of parolees. These findings suggest a pure context effect. Although important, the fact that this study was limited to studying parolees in a single county limits its generalizability. Furthermore, its singular focus on the economic resources of the neighborhoods leaves unaddressed the possible role of other dimensions of socially disorganized neighborhoods for affecting parolees' ability to reintegrate with the community.[1]

It is also likely that the informal social control in a neighborhood helps in integrating parolees into the community. Specifically, the social disorganization theory posits that neighborhoods with greater residential stability and racial/ethnic homogeneity will have more social ties, which will increase the capacity to provide informal social control. Indeed, empirical evidence exists suggesting that neighborhoods with more residential stability will have more informal ties (Connerly and Marans, 1985; Logan and Spitze, 1994; Ross and Jang, 2000;

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[1] This study also focused on the index of concentration at the extremes (ICE) measure proposed by Massey (Massey, 2001). Although Kubrin and Stewart, as well as several other studies, refer to ICE as a measure of inequality, this is an inaccurate characterization. In fact, it captures concentrated economic advantage. This can easily be seen by considering how the ICE measure is constructed: $(A_h - A_b) / pop$; where A_h is the number of residents with very high income (upper quintile), A_b is the number of residents with very low income (bottom quintile), and pop is the population of the tract. In a high poverty tract (all residents are A_b), this measure will have a value of -1. In a high income tract (all residents are A_h), this measure will have a value of 1. These are two equally very low inequality compositions, and yet this measure has values from the two extremes. In a high inequality tract in which half the residents are A_h and half are A_b, it will have a value of 0. But in a very low inequality tract in which no residents are in A_h or A_b, it will also have a value of 0. So, clearly, this is not a measure of inequality. Further empirical evidence of this comes from Kubrin and Stewart's inability to estimate models including both the concentrated disadvantage and ICE measures simultaneously due to collinearity.

Sampson, 1988; Sampson, 1991; Warner and Rountree, 1997), and that neighborhoods with more racial/ethnic heterogeneity will have fewer ties among residents (Connerly and Marans, 1985; Lowenkamp, Cullen, and Pratt, 2003; Warner and Rountree, 1997). To the extent that these informal ties allow residents to convey information about concerns, they likely help in providing the sort of informal social control that would dissuade a parolee from recidivating. Given the well-documented difficulties that parolees face in attempting to reintegrate into the community (Petersilia, 2003), it is plausible that neighborhood characteristics are important for fostering this reintegration. Parolees that are integrated into the neighborhood through employment and social networks are less likely to recidivate.

Beyond these structural characteristics that the social disorganization theory posits will reduce the level of informal social control, it is likely that the increased social disorder as a result of these characteristics may also affect recidivism rates. For instance, studies have suggested that the presence of bars and liquor stores in neighborhoods is a form of social disorder that gives rise to higher rates of crime (Hipp, 2010; Nielsen and Martinez, 2003; Peterson, Krivo, and Harris, 2000; Roncek and Maier, 1991). Given the challenges that parolees face in reintegrating, such social disorder may only further exacerbate these challenges they face.

Local and nearby social context

When considering the role the social context might play in the reintegration of parolees, a key question to address is *what* is the appropriate geographic area in which to measure the social context? Although researchers often simply use census tracts to measure this context, there is no reason to assume that this is the appropriate geographic unit of analysis. Recent work by Hipp (2007a) suggested that, for some contextual measures, smaller geographic aggregations may be more appropriate when assessing residents' perceptions of crime and disorder. The same challenges face researchers when assessing the effect of the social context on recidivism.

Although the census tract may capture the appropriate geographic area, it is also possible that a smaller geographic area may be appropriate for some social contextual measures. For example, Grannis (1998) found that block groups often appeared to be a more appropriate aggregation when determining racial/ethnic clustering patterns.

Beyond the concern with the possible effect that the social context of the parolee's neighborhood may have on the ability to successfully reintegrate, there are reasons to suspect that simply focusing on the context of the neighborhood may be too narrow. First, a well-known point of contention in the neighborhoods and crime literature is the near impossibility of accurately measuring "neighborhoods." Beyond the challenge of deciding on specific boundaries, there is also the very real possibility that such neighborhoods with impermeable boundaries, across which social context does not matter, simply do not exist. If it is in fact the case that the social context confronted by parolees does not stop abruptly at specific neighborhood boundaries, then taking into account the social context of nearby neighborhoods would be quite important. Second, the geographic mobility of persons in general suggests that the social context of a specific census tract likely does not capture the entire context faced by a parolee. If a parolee resides near the boundary of a tract, this might be particularly likely.

These considerations suggest that the same social structural characteristics of the focal neighborhood that may be important for recidivism may also be important when they exist in the surrounding neighborhoods. This implies the need to take into account the social context of neighborhoods surrounding the one in which the parolee resides. Nonetheless, we are aware of no research that has accounted for this possibility.

What effect does proximity to social services have on recidivism?

Given the numerous challenges parolees face during the re-entry process, a particularly important part of the neighborhood social environment may be the social services that can help

them meet those challenges (Petersilia, 2003). These social service organizations constitute *formal* social capital in a neighborhood (Beyerlein and Hipp, 2005; Hipp and Perrin, 2006; Morenoff, Sampson, and Raudenbush, 2001; Paxton, 1999; Sampson and Raudenbush, 1999), and may help parolees reintegrate into society. For instance, employment services can provide information on job openings, job training, and assistance with job search techniques such as résumé-writing and interviewing. Housing services can help parolees secure a stable residence, a necessary first step in community reintegration. Parolees may have similar needs for substance abuse treatment, legal assistance, family services, transportation help, and other services.

There is mounting evidence that the utilization of various social services has positive consequences for parolees. For instance, post-release attendance of community-based substance abuse programs is associated with less substance use and reduced recidivism (Anglin, Prendergast, Farabee, and Cartier, 2002; Visher and Courtney, 2007; Wexler, DeLeon, Thomas, Kressel, and Peters, 1999), whereas program evaluation evidence suggests that community employment programs reduce recidivism (Bouffard, Mackenzie, and Hickman, 2000). Another study found that meeting the service goal of one of the constituent programs of California's Preventing Parolee Crime Program (PPCP) was associated with about 15 percent lower recidivism rates, and that parolees who participated in multiple programs had even better outcomes (Zhang, Roberts, and Callanan, 2006). The fact that only about 40 percent of the parolees in this same study met at least one of these program goals highlights the importance of actual utilization of available services. A study focusing on the reentry of parolees in Sacramento neighborhoods found that crime increases from returning parolees was reduced in neighborhoods with a greater capacity of such voluntary organizations, which is suggestive of the salutary effects of these organizations (Hipp and Yates, 2009).

It is important to emphasize that these service programs cannot help parolees if they are not accessed, and physical proximity to the provider may increase such access. The behavioral model of health care access from the public health literature posits that locating services near populations in need is an important enabling resource (Anderson, 1995). This physical closeness combines with a predisposition towards service-seeking along with need (both perceived and actual) on the part of individuals to increase the likelihood of accessing these services. Although this model was developed for the general population, there seems little reason to suppose that it would not operate similarly for parolees. Access of services might increase simply because the presence of proximate services makes parolees more aware of them. Nearby services might also encourage utilization because they require the expenditure of less time and fewer resources on the part of parolees, as traveling longer distances can be perceived as burdensome for some parolees who experience other time demands in their lives. Furthermore, simply obtaining transportation for traveling the longer distances can pose an additional burden for parolees: those relying on public transportation may find increasing distances to result in a nonlinear increase in travel time due to the challenges of negotiating public transportation routes.

A body of literature suggests that proximity to social services contributes to service utilization. Qualitative studies have found that lack of access to transportation (La Vigne, Wolf, and Jannetta, 2004; Visher, Palmer, and Gouvis Roman, 2007) and lack of information regarding the existence of service providers (Visher and Farrell, 2005; Visher, Palmer, and Gouvis Roman, 2007) deter parolees from accessing services. Numerous studies in the public health field have shown that physical closeness increases access to various types of services. For instance, multiple studies have shown that proximity to health care services increases service utilization (Brameld and Holman, 2006; Gregory et al., 2000; Piette and Moos, 1996; Weiss and Greenlick, 2007). Welfare recipients are more likely to access social services that are more proximate

(Allard, Tolman, and Rosen, 2003) and to access employment opportunities (Allard and Danziger, 2003; Blumenberg and Ong, 1998). Welfare recipients are a useful reference group, because they frequently suffer from the same challenges as parolees: a lack of job skills, lower levels of educational attainment, mental health problems and substance abuse problems (Allard, Tolman, and Rosen, 2003). In contrast, one study that measured the number of service providers within 50 miles found little effect for this measure on various measures of recidivism, which implies the possible importance of measuring the presence of more *nearby* service providers (Grattet, Petersilia, and Lin, 2008). This combined evidence implies that physical closeness to providers likely enables access of these services for offenders.

Are all service providers alike?

Parolees not only need to live near service providers in order to utilize them, but these providers should also have adequate capacity. If these social service providers are over-taxed, the parolee will not be able to obtain the services, increasing the likelihood of recidivism. There is evidence that social service providers in urban areas are proximate to many more low-income households (Allard, 2004), implying that service provision may fall short of demand in such neighborhoods. Returning parolees tend to cluster in a few urban areas, and even within a few neighborhoods within those urban areas (La Vigne, Kachnowski, Travis, Naser, and Visher, 2003; Solomon, Thomson, and Keegan, 2004; Watson, Solomon, Vigne, Travis, Funches, and Parthasarathy, 2004). As a consequence, the service providers in those areas may be over-taxed due to the large number of parolees in need of their services, affecting access and hence recidivism.

Unfortunately, we do not have information on the capacity or utilization levels of the service providers in our study: indeed, such information is rarely collected. We instead followed the strategy of Allard (2004), who estimated what he termed "potential demand": the number of

persons living near each service provider. Such a strategy was also followed in two recent studies (Hipp, Jannetta, Shah, and Turner, 2009a; Hipp, Jannetta, Shah, and Turner, 2009b). Although this provides only a rough estimate of the impact of parolee clustering on service access--as service providers may differ in the number of persons to whom they can provide services at any given time--it does allow for a rough analysis of the differential burden on the service provision environment in the California neighborhoods in which these parolees live.

Finally, given the considerable inequalities that exist across race/ethnicity in U.S. social life, we will also ask if this social context differentially affects parolees based on their race/ethnicity. That is, we ask whether the concentrated disadvantage of a neighborhood differentially affects parolees based on their race/ethnicity. We also ask whether the possible protective effect of nearby social service providers differs based on the race/ethnicity of the parolee.

Data and Methodology

Data

To address these research questions, we created a unique dataset that combines information on parolees in the state of California who were released in 2005 or 2006 with information on the census tracts to which these parolees return, as well as the nearby social service and health service providers with services geared towards these returning parolees. We then followed the addresses of these parolees through all residential moves up through the end of 2006; thus the maximum time period a parolee was followed was 24 months. The address data we used were based on information that parole agents entered into their automated tracking system. Parole agents verify the initial address for the parolee when he or she is released; subsequently the agent uses the address for the required home visits as part of parole contact

requirements (see Petersilia, 2006)[2]. The street address and city data are considered accurate, although zip code information was not as accurate during our study time period as it is today. However, since our geocoding relied on street address and city, this was not an issue for us. The data on parolees were obtained from the California Department of Corrections and Rehabilitation (CDCR). Due to California's determinant sentencing laws, parolees account for nearly all releases from prison. In 2006, only 1,994 of 129,811 felons (1.5%) released from state prison were not released to parole supervision (California Department of Corrections and Rehabilitation, 2007). These data provide information on all parolees during the time period, the dates of entry to and exit from a CDCR institution, and certain characteristics of the parolees. We therefore have information on 280,121 parolee spells for parolees released in either 2005 or 2006 for which we were able to geocode their address. We merged this dataset with another dataset from CDCR listing the effective dates of all known addresses for parolees. We geocoded all of the parolee's addresses during this time period and placed them at a specific latitude-longitude point. Addresses were geocoded with a success rate of 81 percent for the parolees, and analyses were performed on these parolees.

Outcome measures

Our key outcome variable denotes if/when a parolee is returned to prison. We therefore are not concerned with predicting every possible parole violation, but instead focus on more serious transgressions that result in the parolee returning to prison. In our study, of those at risk in each period, 3.6% were returned to prison within the first 30 days, 12.6% were returned to prison during the first 90 days, 24.3% were returned to prison within 180 days of release, and 38.7% were returned to prison within one year of release. Of these, only a few were charged

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[2] More than 60% of parolees have required home visits every month or every two months.

with a new offense, whereas the rest were returned on an administrative violation, which may include the commission of a new crime or a technical violation of parole.[3]

Neighborhood predictor variables

The data on social services available to parolees comes from California Department of Corrections provider database. While this dataset is not exhaustive of all service providers available in California, the fact that it was constructed for parole agents to guide parolees towards services suggests that it captures the most important service providers. It is these providers to which parolees will be made aware. The provider database is maintained by the Division of Adult Parole Operations of the California Department of Corrections and Rehabilitation. Entries into the database are made by Community Resource Managers assigned to parole units across the state, who function as social workers and are responsible for developing a catalog of local resources for parolees. Resources range from housing to anger management to drug and alcohol services—basically all services that parolees may need during their supervision.

At the point of our study, the database contained information on 6,015 providers, of which 5,945 provided one or more types of services. The CDCR is currently working on standardizing the process by which providers are added to the database in the individual counties across the state. Both governmental and non-profit community-based providers are included; programs may service other populations as well as correctional populations. For example, county behavioral health departments are included as well as local hospitals and faith-based organizations. Community-based organizations that serve as contractors for the state's parolee

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[3] The majority of parole violations in California involve the commitment of new crimes. Some parolees who commit new crimes are prosecuted for the criminal offense in the courts and sentenced to a new prison term. When this happens, the parolee's parole is considered revoked by the county court and they are returned to prison with a new term. However, prosecutors often decide not to prosecute parolees for new crimes, either because a lack of evidence would make a court prosecution difficult, or because the prison sentence resulting from court prosecution would not be much longer than the penalty that could be imposed for the parole violation. For a full explanation of California's unique parole system, see Grattet, Petersilia, and Lin (2008).

alcohol and drug network but who also serve other non-parolee clients are included. The

database includes information on the types of resources provided by these organizations

(vouchers, free meals, counseling); the forms of acceptable payment (and whether they provide

low-cost help), a listing of services provided to children, etc.

We geocoded these organizations based on the address provided and placed them at a

specific latitude-longitude point, with a success rate of 89 percent for these 6,015 providers. We

initially created a taxonomy of 13 types of services of importance to parolee reintegration and

classified each organization based on the type of services it provides. Since we are theoretically

interested in the availability of services to parolees, and not the existence of providers, we

allowed a service provider to be counted for each type of service it provides. Given that the

initial analyses using these 13 categories showed considerable similarity over the different types

of services offered, we collapsed these into a single measure of services provided.[4] We then log

transformed this (after adding 1).

For each individual in our sample, we calculated the number of social service

organizations within two miles of the parolee's current address offering each type of service.

Although two miles is a somewhat arbitrary figure, it does comport with the distance used in

prior work and has been suggested as an important distance by county social service

administrators (Allard, 2004; Allard, Tolman, and Rosen, 2003). We measured distance from

parolee address to service provider "as the crow flies" based on the latitude and longitude of the

parolees and the services. While this was a somewhat arduous task, we feel it provides a more

precise assessment of the presence of nearby services than an approach that simply counted the

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[4] The initial 13 categories of services were: 1) housing; 2) family; 3) community; 4) networking; 5) legal; 6) identification; 7) education; 8) labor; 9) transportation; 10) financial; 11) general social services; 12) social services related to clothing; 13) social services related to food.

number of service providers co-residing in the same census tract.[5] To assess this, in ancillary analyses we included a measure that simply counts the number of service providers in the same census tract as the parolee.

Unfortunately, we do not have information on the capacity or utilization levels of the service providers in our study that could be used to directly measure demand. We therefore employed Allard's (2004) "potential demand" proxy for service provider capacity in our analyses by calculating the number of parolees within two miles of a particular provider on the initial date of our study period (January 1 2005). This provides an estimate of the potential demand for a particular service provider. We then calculated for each parolee the average potential demand for the service providers within two miles of the specific parolee. While this provides only a rough estimate of the impact of parolee clustering on service access, as service providers may differ on the number of parolees to whom they can provide services at any given time, it does allow an approximation of the differential burden on the service provision environment of parolees returning to California communities. We natural log transformed this measure (after adding 1) to reduce the possibility of extreme values.

We also took into account the characteristics of the census tract to which these parolees returned by constructing several measures based on the discussion above.[6] These variables come from the 2000 U.S. Census. We constructed measures of the three key constructs of social disorganization theory. We measured *concentrated disadvantage* by creating a factor score based on a principal components of five measures: 1) percent of residents below the poverty line; 2) percent unemployed; 3) percentage of single parent households; 4) median income; 5)

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[5] A limitation to simply measuring the co-occurrence of parolees and service providers in the same tract is that parolees living near the boundary of a tract could actually be closer to providers in an adjacent tract than to providers in their own tract.
[6] In ancillary models, we also included as a control the percentage of residents aged 16-29 to capture the proportion of residents at a crime-prone age. This measure did not have a significant effect in any models, so for parsimony we do not include it here.

median home value. The latter two measures load negatively on this factor. We created a measure of *residential stability* by creating a factor score based on a principal components analysis of three measures: 1) average length of residence; 2) percent of households that moved into their units in the last five years; 3) percentage of units that are currently vacant. We take into account the racial/ethnic composition of the tract by including measures of the percent African American and the *racial/ethnic heterogeneity* based on a Herfindahl Index (Gibbs and Martin, 1962: 670) of five racial/ethnic groupings (white, African-American, Latino, Asian, and other races):

$$\text{EH}_k = 1 - \sum_{1}^{j=J} G_j^{\,2}$$

where G represents the proportion of the population of ethnic group *j* out of *J* ethnic groups.

To capture social disorder in the tract that might affect recidivism, we included a measure of the number of employees who work in bars and liquor stores in the tract per 10,000 population, taken from the 1997 U.S. economic census. We refer to this as *bar and liquor store capacity*, given that it measures the number of employees per capita.[7]

Given that parolees' recidivism is not only likely affected by the context of the census tract in which they reside, but also by nearby census tracts, we accounted for these possible spatial effects by including spatially lagged versions of our key tract-level variables. Although it is always difficult to specify the proper spatial process a priori, we posited that the spatial process works based on a distance decay function with a cutoff at two miles (beyond which the neighborhoods have a value of zero in this W matrix). We suggest the plausibility of this given prior studies suggesting a distance decay function for offenders (Rengert, Piquero, and Jones,

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[7] We used the number of employees rather than the number of establishments, since this measure likely provides a more accurate depiction of the impact such businesses have on the neighborhood. It is not the presence of these establishments that is posited to increase crime, but rather the number of people they attract (both patrons, and possible perpetrators). Since establishments with more patrons generally have more employees, the number of employees better captures this effect than a simple count of the number of establishments.

1999) with an average distance traveled between 1 to 2.5 miles (Pyle, 1974), and that the median census tract in 2000 was about 1.4 miles across (1.95 square miles). We therefore created our spatial weights (W) matrix based on this principal, and then row-standardized this matrix. We then multiplied this matrix by the matrix of values of our exogenous variables in the census tracts in the study. This creates spatially lagged versions of our measures of residential stability, concentrated disadvantage, percent African American, Racial/ethnic heterogeneity, and bar and liquor store employees per capita.

Individual predictor variables

We took into account several characteristics of parolees that might affect recidivism. We created measures of the race/ethnicity of the parolee indicating whether the parolee is African-American, Latino, Asian, white, or other race. We created a measure of the age of the parolee at the first date of the address spell, which represents age at prison release. To take into account possible nonlinear effects of age on recidivism, we also included measures of age squared and age cubed. We created an indicator of whether the parolee is female to account for possible gender differences in recidivism.

From parolees' criminal records we computed the number of prior property offenses, the number of prior violent offenses, the total number of days they have spent in a CDCR institution over their lifetime, and an indicator of whether the parolee is classified as a sex offender. By California statute, violent offenses include all murders committed, about 80% of rapes, 50% of assaults, and 40% of robberies committed. Serious offenses include all of the above four violent offenses as a subset, as well as 60% of burglaries and about 95% of arsons. We computed the total number of days they have spent in CDCR institutions over their lifetime to capture long-term institutionalization. The summary statistics for our measures are shown in Table 1.

<<<Table 1 about here>>>

Methodology

Our outcome variable is the time to recidivism, and we estimated a Cox proportional hazards model. This model provides more information—given that it is measuring time until recidivism—than do models that simply treat recidivism in a logistic framework. Given that our primary focus is on the effect of neighborhood conditions and these social service providers on recidivism, the most conservative approach is to use a fixed effects model that conditions on counties to account for differences across the counties in our sample. Although an alternative approach is to include county-level variables capturing important differences over counties and to estimate a multilevel model, such an approach runs the risk of failing to include all relevant county-level covariates, which would result in biased coefficients at the parolee- and neighborhood-level. Although differences across counties are an interesting question in their own right, they are outside the scope of the current study, and we therefore condition out *all* unobserved time invariant differences across counties with a fixed effects approach. We are therefore estimating the following model:

$$y = \alpha + P\beta_P + T\beta_T + COUNTY\delta$$

where *y* indicates the time until re-incarceration or censoring (the end of the study), α is an intercept, P is a matrix of parolee characteristics that have a vector of β_P effects on the outcome, T is a vector of tract-level measures (including the measure of nearby social service providers) which have a β_T vector of effects, COUNTY is a matrix of K-1 indicators for the K counties in California and δ is a vector of the effects of each of these counties. In this model, we are effectively only comparing parolees with other parolees *living in the same county*. We also stratify all analyses by the number of the address spell: that is, we are effectively comparing all

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first spells with one another, all second spells with one another, etc. (Allison, 1995).[8] We

corrected the standard errors to account for clustering within census tracts with robust standard

errors, as implemented in Stata 9.2.[9] We tested for and found no evidence of multicollinearity

problems or outliers in any of these models.

Results

Relationship between returning parolees and crime

We begin by estimating a model that only contains our individual-level predictors of

recidivism. As seen in model 1 in Table 2, our results are consistent with prior studies: an

African American is about 19% more likely to recidivate at any given time than is a white

parolee, based on the hazard ratio (HR = exp(.170)=1.185), holding constant the other variables

in the model. We also see that older parolees are far less likely to recidivate, given the nonlinear

effects for the quadratic and cubic terms. Figure 1 plots the hazard ratio for recidivating at

different ages compared to the mean age (37), and shows that the youngest parolees are most

likely to recidivate (about 10% more likely than a 37 year old), but this decreases until leveling

off during the 30's at an average rate. Beyond about age 44, there is a sharp drop in the

likelihood of recidivating: by age 60 they are about 30% less likely. We also see that females

are far less likely to recidivate, as they are 33% less likely to recidivate at any given time than

males.

<<<Table 2 about here>>>

<<<Figure 1 about here>>>

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[8] We also estimated ancillary models that only included the first spell experienced by a parolee. The substantive pattern of these results was very similar to those presented in the text. The only differences were that some of the effects were even stronger than those in our presented analyses (results available upon request).

[9] An alternative approach would estimate a multilevel event history model. The multilevel approach estimates tract-specific effects, whereas we are estimating population averaged parameters. Given the computational challenges we encountered when attempting to estimate our large sample in a multilevel framework, we chose instead to estimate the population averaged parameters with the corrected standard errors (Angeles, Guilkey, and Mroz, 2005). The two approaches often provide similar estimates.

Among the individual-level risk factors, whereas sex offenders and those who have spent more time in prison are more likely to recidivate, those who have committed more violent or property offenses than those with fewer such offenses are less likely to recidivate. A one standard deviation increase in time spent in California prisons (3.3 years) increases the likelihood of recidivating at any given point 5.9%, whereas sex offenders are 9.4% more likely to recidivate than non-sex offenders. On the other hand each additional property offense reduces the likelihood of recidivating 1.6% and each additional violent offense reduces the likelihood of recidivating 11.7%.

We next estimated a model that includes our tract-level measures. This model 2 in Table 2 shows mixed evidence for the hypothesis that the structural measures of the social disorganization theory will impact recidivism. On the one hand, parolees residing in economically disadvantaged tracts indeed are more likely to recidivate. A one standard deviation increase in concentrated disadvantage in the census tract increases the hazard ratio of recidivating about 10%. On the other hand, in this initial model it appears that residential stability in the neighborhood *increases* the likelihood of recidivating. However, we suggest that this finding may be explained by failing to account for the social services in the neighborhood—an issue to which we will return shortly. Likewise, this model shows no evidence that the racial/ethnic heterogeneity of the neighborhood increases recidivism, nor that the presence of more African Americans increases recidivism (this latter effect is actually somewhat negative). On the other hand, we do see evidence that the presence of social disorder as characterized by the presence of more bar and liquor store capacity modestly increases recidivism. A one standard deviation increase in bar and liquor store capacity increases recidivism 2.4 %.

We next move beyond only accounting for the social context of the census tract in which the parolee resides to take into account the social context of nearby tracts by including our

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spatially lagged measures. The results of this model (model 3 in Table 2) show that not only does the level of concentrated disadvantage in the focal tract affect recidivism but that increasing levels of disadvantage in nearby tracts further increase the chances of recidivating. Thus, parolees returning to neighborhoods embedded in larger disadvantaged areas are particularly at risk of recidivating. For instance, a parolee residing in a tract one standard deviation above the mean in concentrated disadvantage and surrounded by tracts one standard deviation above the mean in disadvantage is about 13% more likely to recidivate at any given time (HR = exp(.078+.041) = 1.127). We highlight that the other spatially lagged measures do not show an effect in this model that does not account for the presence of social service providers near parolees, although these results will change when we next incorporate the presence of these service providers into the model.

We assessed the appropriateness of aggregating our structural measures to tracts by estimating ancillary models aggregating the structural measures to block groups. The results of these models (not shown) were very similar to those presented in Table 2. The main difference was that the effects for the spatially lagged measures were even stronger in the analyses aggregated to block groups. This is hardly surprising, as aggregating to ever smaller units will increase the importance of the spatially lagged measures to the extent that the small units do not entirely capture the social context of interest. These findings suggest that aggregating these particular structural measures to tracts is more appropriate than aggregating to block groups (or even smaller units) when considering the outcome of recidivism.

Our next models turn to a key focus of our study: does the presence of nearby social service providers affect the likelihood of recidivism? As seen in model 4 of Table 2, there are indeed very strong effects for these providers. A one standard deviation increase in the number of these social service providers nearby reduces the hazard ratio of recidivating 26.8%. As a

converse way to view these dramatic effects, a one standard deviation *decrease* in the number of such social service providers nearby increases the likelihood of recidivating about 37%. In model 5 of Table 2 we also include information on the potential demand of these service providers. Consistent with our expectations, not only does the presence of more service providers nearby reduce the likelihood of recidivating, but increasing the potential demand of these nearby service providers *increases* the likelihood of recidivating. This higher level of potential demand is a proxy for over-taxed providers, and these over-taxed providers are likely less able to provide needed services to parolees.

To illustrate the importance of our precise geographic measure of the number of nearby service providers, we estimated ancillary models in which we substituted for our two-mile distance variable, measures of the logged number of service providers in the parolee's census 1) block group, and 2) tract. These block group- and tract-based measures showed no negative effect on recidivism—in fact, both actually showed a significant positive effect on recidivism (results available upon request). This emphasizes the importance of our more precise geographic measure of the availability of these service providers to the parolee.

It is worth highlighting that accounting for these social service providers has some important effects on our other neighborhood contextual measures in the model, as their results are now much more in line with the expectations of the social disorganization theory. For instance, the effect of concentrated disadvantage has increased appreciably, as the size of the effect for the focal tract is now 50 to 70% larger (compare models 4 and 5 to model 3 in Table 2). Likewise, the concentrated disadvantage of nearby neighborhoods now has a strikingly stronger effect on recidivism as it is about double the size of its effect in the model not accounting for service providers. As a consequence, in our final model a one standard deviation

increase in the concentrated disadvantage of the focal neighborhood and the surrounding

neighborhoods increases the likelihood of recidivating 26%.

We also see in these latter two models that the unexpected positive effect of residential

stability in the focal neighborhood has now disappeared. Thus, it may well be that such

residentially stable neighborhoods have fewer of these social service providers, implying that the

higher level of recidivism in such neighborhoods is not due to residential stability per se, but

rather due to the lack of these providers. Indeed, there is a negative correlation (-.34) between

the residential stability of the tract and the number of providers near a parolee. Furthermore,

these final two models now show that the level of residential stability in surrounding

neighborhoods has a protective effect. This is particularly the case in the final model that takes

into account the potential demand of these service providers, as a one standard deviation increase

in nearby residential stability decreases the likelihood of recidivating 5.6%.

We see in these final two models that the presence of more social disorder as captured by

our measure of bar and liquor store capacity now has an even stronger effect on recidivism. The

size of this effect has now nearly doubled, and we see in these models that the presence of this

form of social disorder in nearby tracts has an additional effect on recidivating. Thus, a one

standard deviation increase in the bar and liquor store capacity in the focal tract and the

surrounding tracts increases the likelihood of recidivating 7% in our final model.

The effect of the social context for parolees of different race/ethnicities

Finally, we test the possibility that this social context differentially affects parolees of

different race/ethnicities. First, given the importance of concentrated disadvantage, we ask

whether this particular neighborhood context affects parolees differently based on their race-

ethnicity by including an interaction term between the race of the parolee and the level of

concentrated disadvantage in the census tract. We plot the results in Figure 2, which shows the

effect of concentrated disadvantage compared to a white parolee living in a tract with an average level of concentrated disadvantage. This is plotted from one standard deviation below the mean to two standard deviations above the mean (given that this is a level of disadvantage that is not entirely uncommon for these parolees). As can be seen, whereas higher concentrated disadvantage in the neighborhood increases recidivism for all parolees, this effect is weakest for African Americans and strongest for whites and Asians. For those living in census tracts with high levels of concentrated disadvantage (two standard deviations above the mean), whites are 31% more likely to recidivate than a white in an average tract. Latinos are less affected by this disadvantage, as they are 24% more likely to recidivate than a white in an average tract, whereas African Americans are 47% more likely.

<<<Figure 2 about here>>>

Second, although our earlier results highlighted that the presence of nearby service providers can reduce the risk of recidivism, we find evidence that these effects differ by the race/ethnicity of the parolee when including an interaction between the race/ethnicity of the parolee and the number of service providers nearby. Plotting these effects in Figure 3, we see that these services have a particularly strong protective effect for African Americans. With no nearby service providers, an African American is about 46% more likely to be incarcerated than a white parolee, however, these race differences are reduced dramatically for parolees with a very high level of service providers nearby. As another way of viewing these results, an African American with seven service providers nearby has the same risk of recidivating as a white parolee with no service providers nearby (this is about equal to logged value 2.1). This finding has important implications, as it suggests that the placement of these service providers near African Americans might make a difference in eliminating the racial disparities in recidivism observed in this sample.

<<<Figure 3 about here>>>

Conclusion

We have extended the literature on parolee reentry by considering the social context to which these parolees return, as well as the important role that social services may play in easing that transition. We have shown that the social context to which parolees return plays an important role in their successful reentry based on the outcome of serious recidivism that results in a return to prison. These findings reinforce and extend the findings of Kubrin and Stewart (2006) regarding the importance of neighborhood context. We extended their results by showing that scholars should take into account the entire context of these neighborhoods—not just the socio-economic context—and even the context of *nearby* neighborhoods. The presence of social service providers nearby appears particularly important. We next highlight our key findings.

Most importantly, we found that the presence of nearby social service providers played an important role in reducing serious recidivism. We used a sophisticated measure that actually measured the distance to these providers, rather than simply counting the number of service providers in the same census tract of the parolee. It is notable that whereas measures of the number of service providers in the parolee's census block group or tract did not show negative effects on recidivism rates, our more precise geographic measure showed a very strong negative effect, emphasizing the importance of precisely measuring the geographic processes of interest (Hipp, 2007a). We hypothesized that the presence of nearby service providers would increase the access of such services and hence reduce recidivism. Thus, although we did not have a measure of the actual utilization of such services, our findings were consistent with a theoretical model in which the presence of such service providers nearby increases the access to such services and therefore reduces recidivism. We are not aware of any alternative models explaining why the presence of nearby service providers would create a spurious relationship

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with lower recidivism. Nonetheless, future research actually measuring such utilization is a natural next step.

Also consistent with our expectations, we found that the positive consequences of these providers are diminished if these service providers have a higher level of potential demand. This is consistent with our expectations that such potential demand reduces the ability of parolees to access these services, and therefore increases their likelihood of recidivating. We acknowledge that our measure of potential demand is only a rough proxy. Nonetheless, the robust findings for this limited measure suggest the possible importance of accounting for the actual demand and capacity of these providers. The fact that so little data is available regarding the actual demand and capacity of these service providers points to an important area of future research.

Furthermore, we found that these protective effects of nearby social service providers were particularly strong for African Americans. To the extent that African Americans have weaker informal resources available in their social networks, the presence of these formal resources located nearby may be particularly important (Tigges, Browne, and Green, 1998). This suggests the possibility that some of the racial disparity in recidivism rates could be reduced with careful targeting of social service providers into the neighborhoods in which these minority parolees are most likely to return. Although speculative given our lack of data regarding actual access of these providers, this certainly suggests an important avenue for future research. Given that prior research has found that African Americans and Latinos live near social and health service providers that have much higher levels of potential demand, it may also be important to account for the capacity level of the providers in minority neighborhoods (Hipp, Jannetta, Shah, and Turner, 2009a; Hipp, Jannetta, Shah, and Turner, 2009b).

Another important implication of our results is that scholars should not only focus on the economic characteristics of the census tract to which parolees return, but also other structural

characteristics of those tracts. Consistent with prior research, we found that parolees returning to tracts with higher levels of concentrated disadvantage are more likely to recidivate, even controlling for several of their individual characteristics. We also saw that the presence of increased social disorder in the tract as measured by the presence of bar and liquor store capacity increases the likelihood of recidivism. This suggests that the level of disorder in these neighborhoods to which parolees return affects their ability to successfully reintegrate.

Furthermore, we found that a rather broad social context affects parolees' recidivism rates. Whereas a rather precise geographic measure of the social service providers was necessary to capture the effect these providers have on recidivism—which makes sense given that their one-to-one relationship with the parolee is what is important for minimizing recidivism—a more dispersed social environment appears important when measuring such constructs as concentrated disadvantage, residential instability, and racial/ethnic heterogeneity. Thus, not only did we find that models aggregating these measures to block groups were no more effective at predicting recidivism than were models aggregating them to tracts, but also that the social structural context of the area surrounding the tract in which a parolee lives is important. Whereas the level of concentrated disadvantage and the level of social disorder in the parolee's own tract increase recidivism rates, recidivism is further affected by the concentrated disadvantage and social disorder of nearby tracts. Although the level of residential stability of the parolee's own tract did not show an effect on recidivism, greater levels of stability in nearby tracts reduces the chances of recidivating. This suggests that residential stability may play an important role for easing reentry when it plays out at a broader geographic level. Thus, it is not enough to simply focus on the social context of the census tract in which the parolee resides, but nearby tracts also have important effects. This finding is hardly surprising given the geographic mobility of all persons,

including parolees. Nonetheless, scholars have not considered this possibility, though clearly it will be important to do so in future studies.

Although this study has provided important insights to the reentry literature, we acknowledge certain limitations. First, our individual-level measures were somewhat limited. Ideally, we would have included measures of job and marital status, given their importance for re-entry. No such measures were available to us. Second, we were only able to view whether the presence of nearby service providers affected recidivism, without any information on the actual needs of these parolees, or the actual usage of these providers. CDCR is currently in the process of collecting information on the needs of parolees using COMPAS, a risk assessment tool being tested in California's corrections system. This would allow future research to test whether "matching" needs to available services sharpens the relationship further. Third, we used re-imprisonment as our outcome in an attempt to avoid some of the possible bias that can come from the discretion used by parole agents when assessing violations. Nonetheless, our measure is also not perfect given the decision process of the courts. Thus, measuring arrest might be a better measure yet as it may be "closer" to criminal behavior than the revocation process (which is greatly affected by policy within CDCR). Of course, measuring actual crime events by parolees would be ideal, although nearly all studies are unable to measure this gold standard.

In conclusion, the social context to which parolees return matters greatly for their successful reentry. Although this is hardly surprising given the broad literature studying the effects of neighborhoods on persons for numerous outcomes, the serious neglect of this social context by the bulk of the reentry literature suggests an important omission. Our results have shown that parolees returning to neighborhoods with higher levels of concentrated disadvantage and social disorder are more likely to recidivate. The social context of nearby tracts also plays an important role in this reentry, and thus scholars are again reminded to take into account the

possibility that using the somewhat arbitrary unit of a census tract may not capture the entire

social context that affects persons (Wilson and Taub, 2006). Finally, an important finding was

that the presence of more social service providers nearby led to lower recidivism rates. We have

suggested that this relationship likely exists because the nearby presence of such providers

encourages accessing them—especially given the limited transportation options of many

parolees. This suggests that these service providers are a particularly important part of the social

context that might increase the likelihood of successful reentry.

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Social context and recidivism

Tables and Figures

Table 1. Summary statistics for measures used in analyses, California parolees in 2005-06

	Mean	Std Dev.
Outcome measure		
Number of days in spell	139.5	151.4
Returned to incarceration	0.159	0.366
Social service providers		
Nearby service providers (logged)	2.000	1.742
Potential demand of nearby service providers	2.028	1.669
Tract measures		
Residential stability	-0.328	0.924
Concentrated disadvantage	0.721	0.984
Percent African-American	10.402	14.295
Racial/ethnic heterogeneity	21.854	15.731
Bars and liquor store employees per capita	2.281	1.196
Spatially lagged measures		
Residential stability	-0.290	0.914
Concentrated disadvantage	0.625	0.984
Percent African-American	10.055	11.965
Racial/ethnic heterogeneity	21.396	12.492
Bars and liquor store employees per capita	2.292	0.903
Individual-level measures		
African-American	26.8%	44.3%
Latino	30.6%	46.1%
Asian	0.6%	7.6%
Other race	6.0%	23.8%
Female	11.1%	31.4%
Age	34.9	9.7
Property convictions on record	0.320	0.679
Violent convictions on record	0.274	0.715
Days spent in CDCR institutions	1,129.0	1,206.2
Registered sex offender	8.1%	27.3%

N = 280,121 parolee spells

Table 2. Effect of number of service providers within two miles of parolee on recidivism

Neighborhood variables	(1)	(2)	(3)	(4)	(5)
Nearby service providers				-0.179 ** -(29.91)	-0.500 ** -(45.08)
Potential demand of nearby service providers					0.341 ** (24.52)
Residential stability		0.038 ** (3.07)	0.040 ** (2.79)	0.017 (0.99)	-0.011 -(0.53)
Concentrated disadvantage		0.092 ** (6.21)	0.078 ** (3.88)	0.115 ** (5.03)	0.136 ** (5.01)
Percent African-American		-0.001 † -(1.75)	-0.001 -(0.75)	-0.001 -(0.77)	-0.001 -(0.81)
Racial/ethnic heterogeneity		0.000 -(0.68)	0.000 -(0.58)	-0.001 -(0.79)	-0.001 -(0.77)
Bars and liquor store employees per capita		0.020 ** (3.12)	0.023 * (2.47)	0.030 ** (2.63)	0.040 ** (2.73)
Spatially lagged variables					
Residential stability			0.006 (0.53)	-0.015 -(1.16)	-0.063 ** -(3.77)
Concentrated disadvantage			0.041 ** (2.88)	0.118 ** (7.10)	0.093 ** (4.29)
Percent African-American			-0.002 -(1.48)	-0.002 -(1.24)	-0.003 † -(1.93)
Racial/ethnic heterogeneity			0.000 (0.33)	0.001 (0.77)	0.001 (0.46)
Bars and liquor store employees per capita			-0.001 -(0.11)	0.014 (0.91)	0.019 (0.97)

Individual-level variables

Age (x 1000)	-1.352	-1.877 †	-0.948	-0.349	0.179
	-(1.41)	-(1.94)	-(0.89)	-(0.33)	(0.16)
Age squared (x 1000)	-0.151 **	-0.163 **	-0.159 **	-0.159 **	-0.120 *
	-(3.05)	-(3.30)	-(3.01)	-(3.05)	-(2.26)
Age cubed (x 1000)	-0.017 **	-0.016 **	-0.018 **	-0.017 **	-0.020 **
	-(4.98)	-(4.78)	-(4.74)	-(4.56)	-(5.17)
African-American	0.170 **	0.153 **	0.146 **	0.147 **	0.131 **
	(12.58)	(10.84)	(9.88)	(9.90)	(8.61)
Latino	-0.006	-0.022 †	-0.028 *	-0.025 †	-0.057 **
	-(0.52)	-(1.70)	-(2.01)	-(1.85)	-(3.90)
Asian	-0.185 **	-0.187 **	-0.197 **	-0.212 **	-0.274 **
	-(2.76)	-(2.81)	-(2.83)	-(3.14)	-(3.85)
Other race	-0.134 **	-0.140 **	-0.173 **	-0.172 **	-0.190 **
	-(4.88)	-(5.13)	-(5.73)	-(5.74)	-(6.31)
Female	-0.406 **	-0.406 **	-0.407 **	-0.390 **	-0.385 **
	-(21.03)	-(21.16)	-(19.07)	-(19.05)	-(18.40)
Years in prison	0.017 **	0.017 **	0.015 **	0.015 **	0.016 **
	(9.07)	(9.00)	(7.54)	(7.56)	(7.95)
Violent convictions	-0.124 **	-0.124 **	-0.114 **	-0.106 **	-0.118 **
	-(12.83)	-(12.66)	-(11.19)	-(10.57)	-(11.73)
Property convictions	-0.016 *	-0.015 *	-0.015 †	-0.011	-0.022 **
	-(2.11)	-(2.03)	-(1.88)	-(1.32)	-(2.69)
Sex offender	0.090 **	0.089 **	0.089 **	0.115 **	0.069 **
	(4.08)	(4.09)	(3.91)	(5.18)	(3.04)

** p < .01(two-tail test), * p < .05 (two-tail test), † p < .10 (two-tail test). Fixed effects (by county) proportional hazard models for recidivism. N = 118,288 parolees. Standard errors corrected for clustering within tracts.

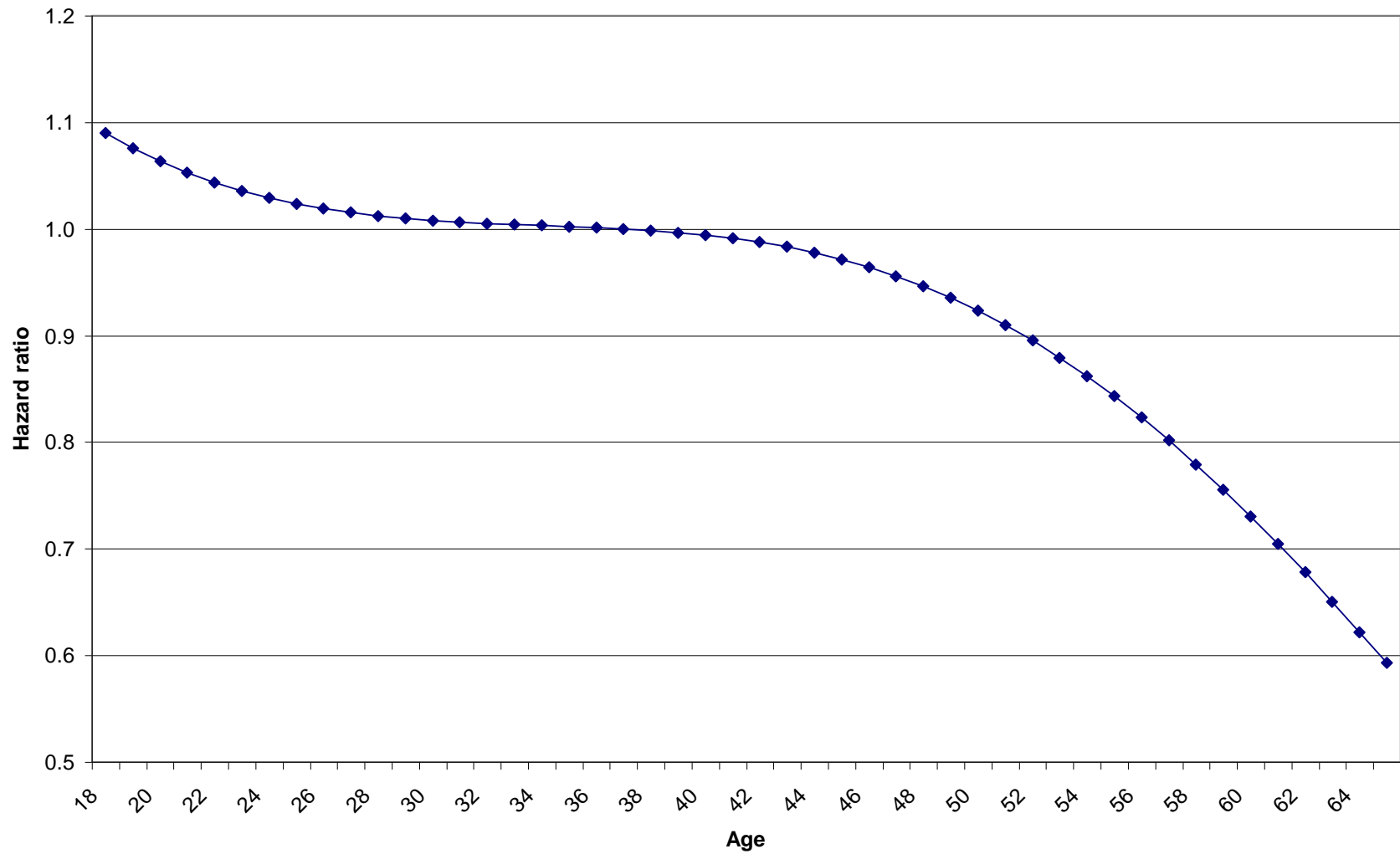**Figure 1. Hazard ratio of recidivism: effect of age (compared to mean age, 37)**

Figure 2. Hazard ratio of recidivism: Effect of concentrated disadvantage on recidivism, by race of ex-offender compared to a white parolee in a tract with an average level of concentrated disadvantage
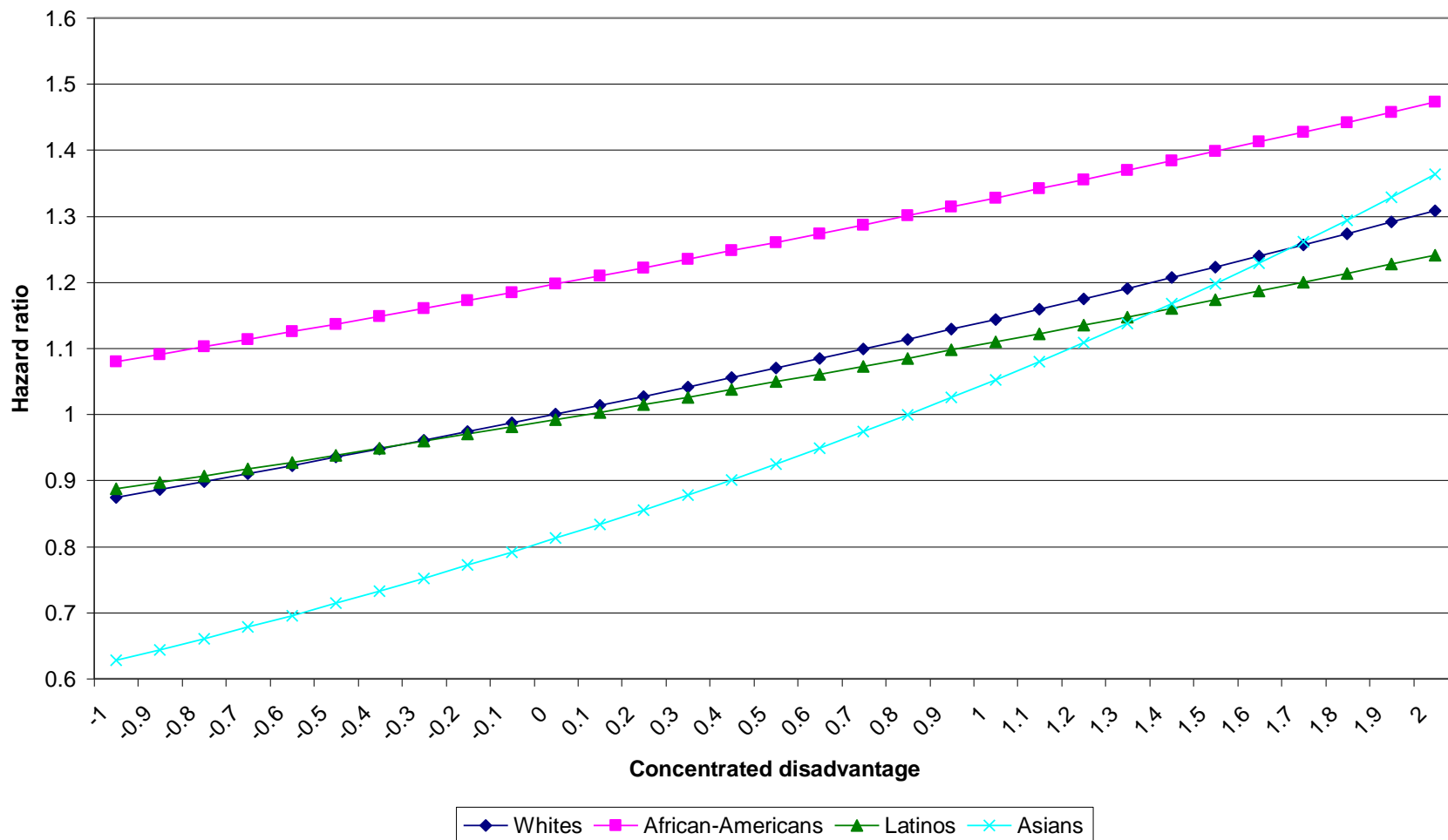
Figure 3. Hazard ratio of recidivism: Effect of nearby social service providers by race/ethnicity of ex-offender (compared to white parolee with no providers nearby)